MP-S03

Part No. 3112-0001

Product Specification

Qualification Test Report No. TR-16041

1	S21535	November 2, 2021	T.Kawakami	S.Kamada	Y.Hashimoto
0	S16234	April 21, 2016	K.Suzuki	S.Suzuki	T.Hirakawa
Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Scope

This product specification defines the test conditions and the performances of the MP-S03, a PCB mounting spring for electronic connection.

2. Product Name and Parts No.

2.1 Product Name

MP-S03

2.2 Parts No.

3112-0001

3. Construction, Material and Finish

Construction, material and finish of the connector are covered as each drawing.

4. Rating

4-1. Operating condition

Temperature ・・・ -40～85℃ , (Containing temperature rise by current.)
Humidity ・・・ 85% MAX.

4-2. Storage condition

Temperature ・・・ -25～60℃ ,
Humidity ・・・ 85% MAX. (No condensation)

5. Test and Performance

Test Condition

The initial condition in this test means the condition before shipment.
Unless otherwise specified, all tests and measurements should be performed under the following conditions in accordance with MIL-STD-202G.

Temperature ・・・ 15℃～35℃
Pressure ・・・ 866hPa～1066hPa（650mmHg～800 mmHg）
Relative Humidity ・・・ 50±2%R.H.

5.1. Electrical Performance

1. Contact resistance	
Reference standard:	MIL-STD-202G, Method 307.
Test conditions:	Solder the MP-S03 to the test board , then contact is pressed against the test board , then measure the contact resistance shown in Fig.1 by the four terminal method. Open circuit voltage：20mV MAX. Circuit current：10mA MAX.

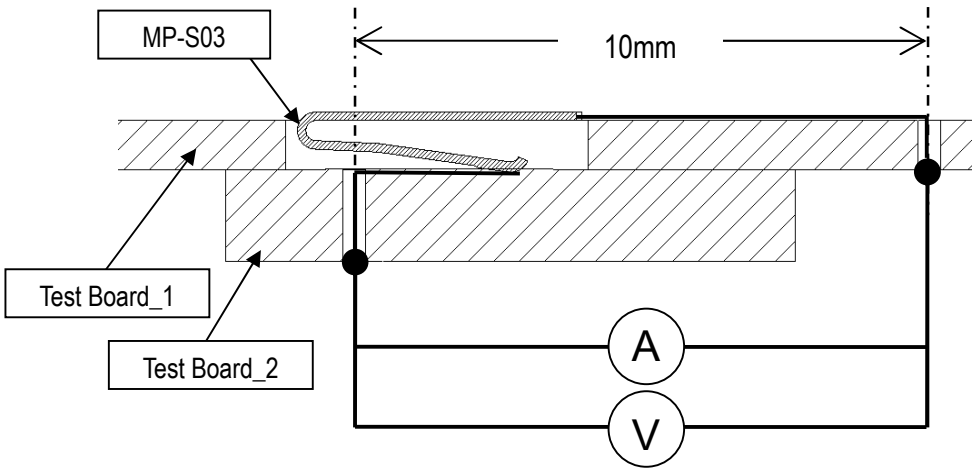


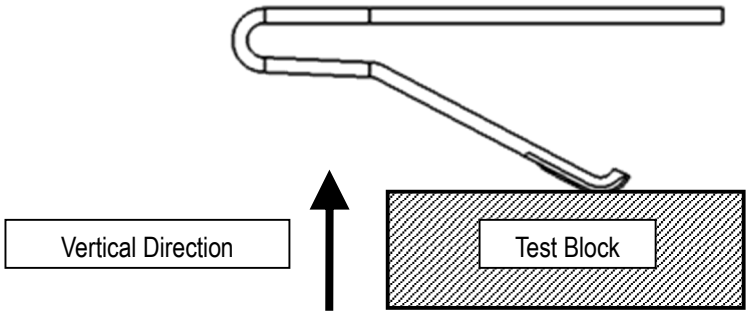
Fig.1

Pass criteria:	Initial：70mΩ MAX. After testing：70mΩMAX

2. Rated Voltage/Current	
Test conditions:	Equilibrium temperature shall be measured by a thermocouple measuring method with rated current. Rated Current：3A Rated Voltage：5V
Pass criteria:	Temperature rise:⊿30℃ MAX

5.2. Mechanical Performance

1. Contact Force	
Reference standard:	-
Test conditions:	Solder the MP-S03 to the test board, then measure the contact force at speed 1.5±0.5mm/min. in direction to show in Fig.2 by the push-pull machine. Working Height: 1.05±0.20mm
Pass criteria:	Contact Force: 0.30～1.1N

2. Durability	
Reference standard:	-
Test conditions:	Solder the MP-S03 to the test board 10 cycles at speed 25±3mm/minutes in direction to show in Fig.2
	 Fig.2
Pass criteria:	Contact resistance: Shall meet 5.1.1 Appearance: No abnormality adversely affecting the performance shall occur.

3. Shock	
Reference standard:	-
Test conditions:	Attach the connecting MP-S03 to the shock machine and add the following shock. During the testing, run 100mA DC to check electrical discontinuity. MAX.G: 50G　　Directions: 6 mutually perpendicular direction Duration: 11msec　　Cycle: 3 cycles each direction Wave Form: Half Sinusoidal
Pass criteria:	Contact resistance: Shall meet 5.1.1. Electrical discontinuity: No electrical discontinuity greater than 1μs shall occur. Appearance: No abnormality adversely affecting the performance shall occur.

4. Vibration	
Reference standard:	MIL-STD-202-201
Test conditions:	Attach the connecting MP-S03 to the vibrator and add the following vibration. Then apply the following vibration. During the testing, run 100mA DC to check electrical discontinuity. Frequency: 10Hz→55Hz→10Hz/approx. 1min. Directions: 3 mutually perpendicular directions. Total Amplitude: 1.52mm Sweep duration: 2 hours for each direction, a total of 6 hours.
Pass criteria:	Contact resistance: Shall meet 5.1.1. Electrical discontinuity: No electrical discontinuity greater than 1μs shall occur. Appearance: No abnormality adversely affecting the performance shall occur.

5.3. Environmental Performance

1. Cold Test	
Reference standard:	IEC-60068-2-1
Test conditions:	Apply the following environment to the mating MP-S03. Temperature ：-40±2℃ Duration ：48 hours
Pass criteria:	Contact resistance: Shall meet 5.1.1. Appearance: No abnormality adversely affecting the performance shall occur.

2. Heat Test	
Reference standard:	MIL-STD-202, Method 108A, Condition A
Test conditions:	Apply the following environment to the mating MP-S03. Temperature ：85±2℃ Duration ：96 hours
Pass criteria:	Contact resistance: Shall meet 5.1.1. Appearance: No abnormality adversely affecting the performance shall occur.

3. Thermal Shock	
Reference standard:	MIL-STD-202, Method 107G, Condition A
Test conditions:	Apply the following environment to the mating MP-S03. Temperature ：-55℃:30min. → 85℃:30min. Transition time ：5min. MAX. No. of cycles ：5 cycles
Pass criteria:	Contact resistance: Shall meet 5.1.1. Appearance: No abnormality adversely affecting the performance shall occur.

4. Humidity (Steady State)	
Reference standard:	MIL-STD-202, Method 103B, Condition B
Test conditions:	Apply the following environment to the mating MP-S03. Temperature ：40±2℃ Humidity ：90～95%RH Duration ：96 hours
Pass criteria:	Contact resistance: Shall meet 5.1.1. Appearance: No abnormality adversely affecting the performance shall occur.

5.4. Others

1. Solderability	
Reference standard:	JESD22-B102E
Test conditions:	The component should be tested according to JESD22-B102E. Reflow temperature profile. ：Fig.3 （Based by J-STD-020D） The number of reflow is 1 times.

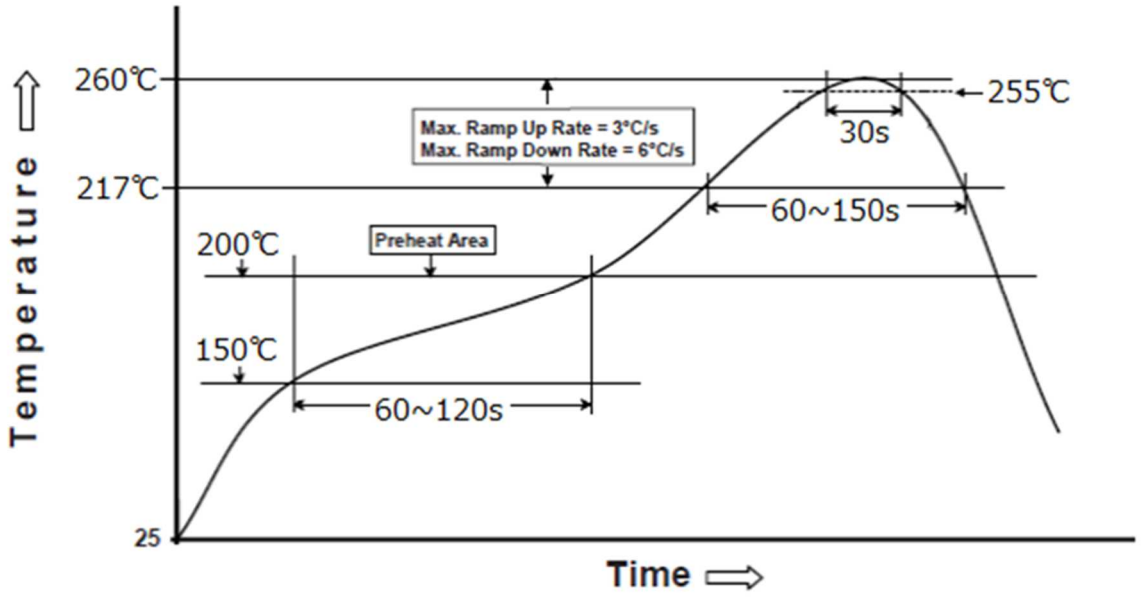


Fig.3

Pass criteria:	At least 95% of immersed area should be adequately wetted No voids larger than 25% of solder area is found on solder joints

2. Resistance to soldering heat	
Reference standard:	-
Test conditions:	Reflow temperature profile. ：Fig.3 （Based by J-STD-020D） The number of reflow is 3 times. Moisture sensitivity : Level 1 （Based by J-STD-20 Table5-1）
Pass criteria:	Contact resistance: Shall meet 5.1.1. Appearance: No abnormality adversely affecting the performance shall occur.

5.5 Test Sequence and Specimen Quantity

Table 1 Test Sequence and Sample Quantity

Test Item	Group												
	A	B	C	D	E	F	G	H	J	K	L	M	N
Contact resistance			1,4	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1.3		2
Rated voltage/Current	1												
Contact force		1	3										
Durability			2										
Shock				2									
Vibration					2								
Cold test						2							
Heat test							2						
Thermal shock test								2					
Humidity (steady state)									2				
H_2S gas										2			
Saltwater spray											2		
Surface mount solderability test												1	
Resistance to reflow soldering heat													1
Specimen quantity	5	10	10	5	5	5	5	5	5	5	5	5	5

※Numbers indicate sequence in which tests are performed.

6. Recommended Metal Mask

Refer to drawing for the recommended metal mask thickness and opening dimension.